

BEST AVAILABLE COPYAMENDMENT TO THE CLAIMS:

This listing of claims will replace all prior versions of claims in the application:

LISTING OF CLAIMS:

1-24, 28, 31 and 33-46 (Cancelled)

25. (Currently amended) A method for fabricating a magnetic tunnel junction (MTJ) sensor for use in a magnetic read head having an air bearing surface (ABS), the method comprising the unordered steps of:

(a) forming a MTJ stack with an active region disposed at the ABS and having two opposite sides each disposed generally orthogonally to the ABS, including the unordered steps of:

(a.1) forming an antiferromagnetic (AFM) layer,

(a.2) forming a pinned layer of ferromagnetic (FM) material in contact with the AFM layer,

(a.3) forming a free layer of FM material,

(a.4) forming a tunnel junction layer of electrically nonconductive material disposed between the pinned layer and the free layer, and

(a.5) removing all material outside of the active region from the AFM layer, the pinned layer, and the tunnel junction layer to define the two opposite sides of the active region; and

(b) forming a longitudinal bias layer outside of the active region in contact with the free layer for biasing the magnetic moment of the free layer in substantially a predetermined direction in the absence of an external magnetic field, the bias layer comprising an AFM material.

26. (Original) The method of claim 25 further comprising the step of:

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(c) forming an insulating layer of electrically nonconductive material on and in contact with the free layer outside of the active region and in abutting contact with the two opposite sides of the active region.

27. (Original) The method of claim 26 wherein the longitudinal bias layer is disposed without contacting the active region.

29. (Cancelled)

30. (Original) The method of claim 25 wherein the longitudinal bias layer is disposed without contacting the active region.

32. (Cancelled)

47. (New) The method of claim 25, wherein a portion of the free layer extends beyond the active region, and wherein the bias layer is exchange coupled with the free layer outside of the active region.

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